Lab-Aids Correlations for

NEBRASKA'S COLLEGE AND CAREER READY STANDARDS FOR SCIENCE 2017

Grades 6–8

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This document is intended to show how the SEPUP 3rd edition (NGSS) materials align with Nebraska's College and Career Ready Standards for Science 2017, Grades 6–8.

ABOUT OUR PROGRAMS

Lab-Aids has maintained its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, grades 6-12. All core curricula support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs that clearly show what students know and are able to do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information please visit https://www.lab-aids.com/third-edition.

SEPUP

Materials from the Science Education for Public Understanding Program (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by Lab- Aids, Inc. Since 1987, development of SEPUP materials has been supported by grants from the National Science Foundation and other public and private sources. SEPUP programs include student books, equipment kits, teacher materials, and online digital content, and are available as full year courses, or separately, as 17 units, each taking 3-8 weeks to complete, as listed below.

Middle Level Units, listed by discipline

Physical Science	**Life Science**	**Earth Science**
Fields and Interactions	Cells to Organisms	Earth's Resources
Force and Motion	Reproduction	Land, Water, and Human Interactions
Waves	Evolution	Weather and Climate
Chemistry of Materials	Ecology	Geological Processes
Chemical Reactions	Body Systems	Solar System and Beyond
Energy	Biomedical Engineering	

ABOUT THE LAB-AIDS CITATIONS

Citations included in the correlation document are as follows:

Unit title, Activity Number
The Chemistry of Materials: 14, 15*
* indicates where Performance Expectation is assessed

Disciplinary Core Ideas	MS-PS1.A
Common Core English-Language Arts	RST.6-8.3
Common Core Mathematics	MP.2

SIXTH GRADE

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.6.4 Energy					
SC.6.4.1. Gather, analyze, and communicate evidence of energy					
SC.6.4.1.A. Apply scientific principles to **design, construct, and test a device** that either minimizes or maximizes thermal energy transfer. Assessment does not include calculating the total amount of thermal energy transferred.	*Energy:* 1, 7, 8, 10, 11, 12, 13*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ETS1.A MS-ETS1.B MS-PS3.A MS-PS3.B	Cause and Effect Connections to the Nature of Science Energy and Matter Patterns Scale, Proportion, and Quantity Structure and Function Systems and System Models	RST.6-8.1 RST.6-8.3 SL.8.4 WHST.6-8.9 EE.6.A.2 EE.6.C.9 MP.2
SC.6.4.1.B. **Define the criteria and constraints of a design problem** with sufficient precision to ensure a successful solution, taking into account relevant scientific principle and potential impacts on people and the natural environment that may limit possible solutions.	*Biomedical Engineering:* 1, 2, 3*	Asking Questions and Defining Problems	MS-ETS1.A MS-ETS1.B MS-ETS1.C	Structure and Function Interdependence of Science, Engineering, and Technology Influence of Science, Engineering, and Technology on Society and the Natural World	RST.6-8.1 RST.6-8.2 RST.6-8.9
	Force and Motion: 1, 10, 11, 13, 14, 15*	Analyzing and Interpreting Data Asking Questions and Defining Problems	MS-ETS1.A MS-PS2.A MS-PS3.A MS-PS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science	RST.6-8.1 RST.6-8.3 RST.6-8.7 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations		Patterns Stability and Change Systems and System Models	
	*Fields and Interactions: 2, 3, 6**	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to Nature of Science Developing and Using Models Engaging in Argument from Evidence	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS3.A MS-PS2.B	Connections to Nature of Science: Influence of Science, Engineering, and Technology on Society and the Natural World Systems and System Models	RST.6-8.1 RST.6-8.7 SL8.5 MP.2
	Land, Water, and Human Interactions: 7, 12*	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models	MS-ETS1.A MS-ETS2.A MS-ETS2.C	Connections to Engineering, Technology, and Applications of Science Energy and Matter Scale, Proportion, and Quantity	RST.6-8.3

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
				Stability and Change	
SC.6.4.1.C. **Plan an investigation** to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. Assessment does not include calculating the total amount of thermal energy transferred.	*Energy:* 1, 4, 6, 7, 8*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Planning and Carrying Out Investigations	MS-PS3.A MS-PS3.B MS-PS3.C	Cause and Effect Energy and Matter Patterns Scale, Proportion, and Quantity Systems and System Models	RST.6-8.3 WHST.6-8.1 WHST.6-8.9 EE.6.C.9 MP.2
SC.6.4.1.D. **Construct, use, and present arguments** to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. Assessment does not include calculations of energy.	*Energy:* 2, 3, 4, 5, 6*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out	MS-PS3.A MS-PS3.B MS-PS3.C	Cause and Effect Energy and Matter Patterns Scale, Proportion, and Quantity Systems and System Models	RST.6-8.3 WHST.6-8.1 WHST.6-8.9 EE.6.C.9 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Investigations			
SC.6.6. Structure and Function and Information Processing					
SC.6.6.2. Gather, analyze, and communicate evidence of the relationship between structure and function in living things.					
SC.6.6.2.A. **Conduct an investigation** to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. of the other organelles is limited to their relationship to the whole cell. Assessment does not include the biochemical function of cells or cell parts.	*From Cells to Organisms: 1, 2, 3, 4, 9**	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-LS1.A MS-LS1.C MS-PS3.D	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Energy and Matter Patterns Scale, Proportion, and Quantity Structure and Function Systems and System Models	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2 WHST.6-8.7 WHST.6-8.9 SL.8.5
SC.6.6.2.B. **Develop and use a model** to describe the function of a cell as a whole and ways parts of cells contribute to the function. Assessment of organelle	*From Cells to Organisms:* 6, 7, 8*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and	MS-LS1.A	Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2 WHST.6-8.7 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
structure/function relationships is limited to the cell wall and cell membrane. Assessment of the function		Designing Solutions Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations		Scale, Proportion, and Quantity Structure and Function Systems and System Models	SL.8.5
SC.6.6.2.C. **Use argument supported by evidence** for how the body is a system of interacting subsystems composed of groups of cells. Assessment does not include the mechanism of one body system independent of others. Assessment is limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.	*From Cells to Organisms*: 10, 14, 15	Analyzing and Interpret Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	MS-LS1.A	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Patterns Scale, Proportion, and Quantity	RST.6-8.2 RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.9
SC.6.6.2.D. **Gather and synthesize information** that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. Assessment does not include mechanisms for the transmission of this information.	*Body Systems:* 6, 7, 8*	Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information Planning and Carrying Out an Investigation	MS-LS1.D	Cause and Effect	RST.6-8.4 6.SP.B.4
SC.6.9 Growth, Development, and Reproduction of Organisms					

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.6.9.3 Gather, analyze, and communicate evidence of the inheritance and variation of traits.					
SC.6.9.3.A. **Construct an argument** based on evidence for how plant and animal adaptations affect the probability of successful reproduction.	*Reproduction:* 10*, 11*	Constructing Explanations and Designing Solutions Developing and Using Models	MS-LS1.B MS-LS3.A MS-LS3.B	Cause and Effect Patterns	RI.6.8 RST.6-8.1 RST.6-8.4 WHST.6-8.1 6.SP.A.2 6.SP.B.4 6.SP.B.5
SC.6.9.3.B. **Construct a scientific explanation** based on evidence for how environmental and genetic factors influence the growth of organisms. Assessment does not include genetic mechanisms, gene regulation, or biochemical processes.	*Reproduction:* 1, 7*	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	MS-LS3.A MS-LS1.B	Cause and Effect Connections to the Nature of Science Structure and Function	RST.6-8.2 SL.8.1 WHST.6-8.9 6.RP.A.1 6.SP.B.5
SC.6.9.3.C. **Develop and use a model** to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. Assessment does not include specific changes at the molecular level, mechanisms for protein synthesis, or specific types of mutations.	*Reproduction:* 1, 2, 3, 4, 5, 6, 8, 9*	Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence	MS-LS1.B MS-LS3.A MS-LS3.B	Cause and Effect Connections to the Nature of Science Patterns Scale, Proportion, and Quantity Structure and Function	RST.6-8.1 RST.6-8.2 RST.6-8.4 RST.6-8.7 RST.6-8.9 SL.8.1 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking			
SC.6.12. Weather and Climate					
SC.6.12.4. Gather, analyze, and communicate evidence of factors and interactions that affect weather and climate.					
SC.6.12.4.A. **Collect data** to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. Assessment does not include recalling the names of cloud types or weather symbols used on weather maps or the reported diagrams from weather stations.	*Weather and Climate:* 2, 3, 7, 9, 10, 11, 12, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Planning and Carrying Out Investigations	MS-ETS1.B MS-ETS1.C MS-ESS2.C MS-ESS2.D MS-ESS3.D MS-LS4.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Energy and Matter Patterns Structure and Function System and System Models	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.7 SL.8.1 SL.8.4 MP.2
SC.6.12.4.B. **Develop and use a model** to describe how unequal heating and rotation of the Earth cause patterns of	*Weather and Climate:* 2, 3, 4, 5,	Analyzing and Interpreting Data Asking Questions and Defining Problems	MS-ESS2.C MS-ESS2.D MS-ESS3.D MS-LS4.C MS-PS3.B	Cause and Effect Connections to Engineering, Technology, and Applications	RST.6-8.3 RST.6-8.7 WHST.6-8.7 SL.8.1

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
atmospheric and oceanic circulation that determine regional climates. Assessment does not include the dynamics of the Coriolis effect.	6, 7, 8, 9, 10, 11, 13, 14*	Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Planning and Carrying Out Investigations		of Science Connections to the Nature of Science Energy and Matter Patterns Systems and System Models	SL.8.4 MP.2
SC.6.12.4.C. **Ask questions** to clarify evidence of the factors that have caused the change in global temperatures over thousands of years.	*Weather and Climate:* 1, 10, 14, 15, 16*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Developing and Using Models Planning and Carrying Out Investigations	MS-ESS2.C MS-ESS2.D MS-ESS3.C MS-ESS3.D	Connections to the Nature of Science Energy and Matter Scale, Proportion, and Quantity Stability and Change Systems and System Models	RST.6-8.7 WHST.6-8.1 SL.8.1 MP.4
SC.6.12.4.D. **Analyze and interpret data** on weather and climate to forecast future catastrophic events and inform the development of	*Geological Processes:* 1, 3, 4, 6, 7, 8, 11, 18*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of	MS-ESS1.C MS-ESS2.A MS-ESS2.C MS-ESS3.B	Cause and Effect Connections to Engineering, Technology, and Applications of Science	RST.6-8.1 RST.6-8.2 RST.6-8.3 RST.6-8.4 WHST.6-8.1 WHST.6-8.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
technologies to mitigate their effect.		Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking		Connections to the Nature of Science Patterns Scale, Proportion, and Quantity Stability and Change Structure and Function Systems and System Models	WHST.6-8.9 SL.8.1 6.NS.C.5 MP.2 MP.4
SC.6.13 Earth's Systems					
SC.6.13.5 Gather, analyze, and communicate evidence of the flow of energy and cycling of matter associated with Earth's materials and processes					
SC.6.13.5.A. **Develop a model** to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. A quantitative understanding of the latent heats of vaporization and fusion is not assessed.	*Land, Water, and Human Interactions:* 2, 5, 7, 8, 9*	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions. Developing and Using Models Planning and Carrying Out Investigations	MS-ETS1.A MS-ESS2.A MS-ESS2.C MS-ESS3.C MS-PS2.A	Cause and Effect Connections to Engineering, Technology, and Applications of Science Energy and Matter Scale, Proportion, and Quantity Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.2

SEVENTH GRADE

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.3 Structure and Properties of Matter					
SC.7.3.1. Gather, analyze, and communicate evidence of the structure, properties, and interactions of matter.					
SC.7.3.1.A. **Develop** <u>**models** to describe the atomic</u> composition of simple molecules. Assessment does not include valence electrons and bonding energy, discussing the ionic nature of subunits of complex structures, or a complete description of all individual atoms in a complex molecule extended structure is not required.	*Chemistry of Materials:* 2, 6, 7, 12*	Analyzing and Interpreting Data Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-PS1.A MS-PS1.B	Connections to Engineering, Technology, and Applications of Science Scale, Proportion, and Quantity Structure and Function	RST.6-8.2 RST.6-8.3 RST.6-8.7
SC.7.3.1.B. **Gather and make sense of information** to describe that <u>synthetic materials come from natural resources</u> and impact society. Assessment is limited to qualitative information.	*Chemistry of Materials:* 1, 2, 3, 4, 5, 11, 12, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-PS1.A MS-PS1.B	Connections to Engineering, Technology, and Applications of Science Scale, Proportion, and Quantity Structure and Function	RST.6-8.3 RST.6-8.7 WHST.6-8.1 WHST.6-8.9 7.RP.A.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.3.1.C. **Develop a model** that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	*Chemistry of Materials:* 8, 9, 10*	Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Planning and Carrying Out Investigations	MS-PS1.A MS-PS3.A	Cause and Effect	RST.6-8.3
SC.7.5. Chemical Reactions					
SC.7.5.2. Gather, analyze, and communicate evidence of chemical reactions.					
SC.7.5.2.A. **Analyze and interpret data** on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. Assessment is limited to analysis of the following properties: density, melting point, boiling point, solubility, flammability, and odor.	*Chemical Reactions:* 1, 2, 3, 4, 5*	Analyzing and Interpreting Data Connections to the Nature of Science Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-PS1.A MS-PS1.B	Patterns Scale, Proportion, and Quantity Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.4 RST.6-8.7 RST.6-8.9 SL.8.1 WHST.6-8.9
	Chemistry of Materials: 4	Analyzing and Interpreting Data Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-PS1.A	Scale, Proportion, and Quantity Structure and Function	7.RP.A.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.5.2.B. **Develop and use a model** to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. Assessment does not include the use of atomic masses, balancing symbolic equations, or intermolecular forces.	*Chemical Reactions:* 1, 2, 3, 4, 5, 6, 7*	Analyzing and Interpreting Data Connections to the Nature of Science Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-PS1.A MS-PS1.B	Energy and Matter Patterns Scale, Proportion, and Quantity Structure and Function Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.4 RST.6-8.7 RST.6-8.9 SL.8.1 WHST.6-8.9
SC.7.5.2.C. **Undertake a design project** to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. Assessment is limited to the criteria of amount, time, and temperature of substance in testing the device	*Chemical Reactions:* 2, 3, 5, 8, 9, 10, 11*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ETS1.B MS-ETS1.C MS-PS1.A MS-PS1.B MS-PS3.A	Energy and Matter Patterns	RST.6-8.1 RST.6-8.3 RST.6-8.4 RST.6-8.7 SL.8.1 WHST.6-8.9
SC.7.5.2.D. **Analyze data from tests** to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	*Biomedical Engineering: 1, 2, 4, 5**	Analyzing and Interpreting Data Asking Questions and Defining Problems Developing and Using Models Constructing Explanations and	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-LS1.A	Connections to Engineering, Technology, and Applications of Science Structure and Function	SL.8.4 6.RP.A.1 6.RP.A.3 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Designing Solutions Using Mathematics and Computational Thinking			
	Chemical Reactions: 8, 9, 10, 11	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions	MS-ETS1.B MS-ETS1.C MS-PS1.B MS-PS3.A	Energy and Matter	RST.6-8.3
	*Weather and Climate: 12**	Analyzing and Interpreting Data Developing and Using Models Engaging in Argument from Evidence Planning and Carrying Out Investigations	MS-ETS1.B MS-ESS1.C MS-ESS2.C	Connections to Engineering, Technology and Applications of Science Structure and Function	RST.6-8.3 SL.8.1 SL.8.4
	*Fields and Interactions: 6, 11, 13, 15**	Analyzing and Interpreting Data Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS3.A MS-PS3.C MS-PS2.B	Cause and Effect Connections to Nature of Science Scale, Proportion, and Quantity Systems and System Models	RST.6-8.1 RST.6-8.7 SL8.5 WHST.6-8.9 MP.2
SC.7.7 Interdependent Relationships in Ecosystems					
SC.7.7.3. Gather, analyze, and communicate evidence of interdependent relationships in ecosystems.					

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.7.3.A. **Construct an explanation** that predicts patterns of interactions among organisms across multiple ecosystems.	*Ecology:* 2, 8, 10*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-LS2.A	Cause and Effect Connections to the Nature of Science Energy and Matter Patterns Stability and Change Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.4 SL.8.5 WHST.6-8.9 6.RP.A.1 6.RP.A.3 MP.2 MP.4
SC.7.7.3.B. **Evaluate competing design solutions** for maintaining biodiversity and ecosystem services.	*Ecology:* 2, 4, 15*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ETS1.B MS-LS2.C MS-LS4.D	Cause and Effect Connections to the Nature of Science Energy and Matter Patterns Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.5 WHST.6-8.1 WHST.6-8.9 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Using Mathematics and Computational Thinking			
SC.7.7.3.C. **Evaluate competing design solutions** using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Biomedical Engineering:* 4, 5, 7*	Analyzing and Interpreting Data Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Using Mathematics and Computational Thinking	MS-ETS1.B MS-ETS1.C MS-LS1.A	Connections to Engineering, Technology, and Applications of Science Structure and Function	SL.8.4 6.RP.A.1 6.RP.A.3 MP.2
	Fields and Interactions: 6, 13, 15	Analyzing and Interpreting Data Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence	MS-PS2.B MS-PS3.A MS-ETS1.A MS-ETS1.B MS-ETS1.C	Cause and Effect Connections to Nature of Science Systems and System Models	RST.6-8.1 RST.6-8.7 SL.8.5 WHST.6-8.9 MP.2
	*Land, Water, and Human Interactions: 12, 16**	Constructing Explanations and Designing Solutions Engaging in Argument from	MS-ESS2.C MS-ESS3.C MS-ETS1.B	Cause and Effect Connections to Nature of Science	WHST.6-8.2 SL.8.4

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Evidence			
SC.7.7.3.D. Apply scientific principles to **design** a method for monitoring and increasing positive human impact on the environment.	*Land, Water, and Human Interactions:* 1, 3, 4, 5, 6, 9, 13, 14, 15, 16*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ESS2.A MS-ESS2.C MS-ESS3.C MS-LS2.A MS-LS2.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Energy and Matter Patterns Scale, Proportion, and Quantity Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.2 WHST.6-8.9 SL.8.4 6.RP.A.1 6.SP.B.5 MP.4
SC.7.8 .Matter and Energy in Organisms and Ecosystems					
SC.7.8.4. Gather, analyze, and communicate evidence of the flow of energy and cycling of matter in organisms and ecosystems.					
SC.7.8.4.A. **Construct a scientific explanation** based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. Assessment does not include	*From Cells to Organisms*: 12, 13*	Constructing Explanations and Designing Solutions	MS-LS1.A MS-LS1.C MS-PS3.D	Energy and Matter Structure and Function	RST.6-8.3

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
the biochemical mechanisms of photosynthesis.					
SC.7.8.4.B. **Develop a model** to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as matter moves through an organism. Assessment does not include details of the chemical reactions for photosynthesis or respiration.	*From Cells to Organisms*: 5, 11*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Developing and Using Models Planning and Carrying Out an Investigation	MS-LS1.A MS-LS1.C MS-PS3.D	Energy and Matter	RST.6-8.2 RST.6-8.3 RST.6-8.9
	Body Systems: 5	Constructing Explanations and Designing Solutions Developing and Using Models	MS-LS1.A MS-LS1.C	Energy and Matter	RST.6-8.2 RST.6-8.9
SC.7.8.4.C. **Analyze and interpret data** to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	*Ecology:* 5, 6, 9*	Analyzing and Interpret Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-LS2.A	Cause and Effect Connections to the Nature of Science Energy and Matter Patterns Stability and Change Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.7 RST.6-8.8 SL.8.4 SL.8.5 WHST.6-8.1 WHST.6-8.9 6.EE.C.9 6.RP.A.1 6.RP.A.3 6.SP.B.5 MP.2 MP.4

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.8.4.D. **Develop a model** to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. Assessment does not include the use of chemical reactions to describe the processes	*Ecology:* 7, 8, 11, 12*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Developing and Using Models Planning and Carrying Out Investigations	MS-LS2.B	Cause and Effect Energy and Matter Systems and System Models	RST.6-8.3 RST.6-8.7 WHST.6-8.9 6.RP.A.1 6.RP.A.3 MP.2 MP.4
	From Cells to Organisms: 13	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Planning and Carrying Out Investigations	MS-LS1.C MS-PS3.D	Energy and Matter	RST.6-8.3
SC.7.8.4.E. **Construct an argument** supported by evidence that changes to physical or biological components of an ecosystem affect populations.	*Ecology:* 1, 2, 3, 4, 5, 6, 13, 14*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-LS2.C	Cause and Effect Connections to the Nature of Science Energy and Matter Patterns Stability and Change Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.5 WHST.6-8.1 WHST.6-8.9 6.EE.C.9 6.SP.B.5 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Planning and Carrying Out Investigations			
SC.7.13. Earth's Systems					
SC.7.13.5. Gather, analyze, and communicate evidence of the flow of energy and cycling of matter associated with Earth's materials and processes.					
SC.7.13.5.A. **Develop a model** to describe the cycling of Earth's materials and the flow of energy that drives this process. Assessment does not include the identification and naming of minerals.	*Geological Processes:* 2, 5, 8, 9, 10, 11, 13, 14, 15*	Analyze and Interpret Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-ESS1.C MS-ESS2.A MS-ESS2.B MS-ESS2.C MS-ESS3.A MS-ESS3.B	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Energy and Matter Patterns Scale, Proportion, and Quantity Stability and Change Structure and Function Systems and System Models	RST.6-8.2 RST.6-8.3 RST.6-8.4 WHST.6-8.1 WHST.6-8.2 SL.8.1 6.RP.A.1 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.13.5.B. **Construct a scientific explanation** based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	*Geological Processes:* 2, 16*, 17*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ESS2.A MS-ESS2.C MS-ESS3.A	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Patterns Scale, Proportion, and Quantity Structure and Function Systems and System Models	RST.6-8.2 RST.6-8.3 WHST.6-8.1 WHST.6-8.7 SL.8.1
	Earth's Resources: 1, 2, 3, 5, 7, 8, 14*	Analyzing and Interpreting Data Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-ESS3.A MS-ESS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Scale, Proportion, and Quantity Stability and Change Structure and Function	RST.6-8.1 RST.6-8.3 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 7.RP.A.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.13.5.C. **Construct an argument** supported by evidence for how increases in human population and per-capita consumption of natural resources <u>impact Earth's systems.</u>	*Earth's Resources:* 2, 4, 6, 13*	Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-ESS3.A MS-ESS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Systems and System Models	RST.6-8.1 RST.6-8.3 WHST.6-8.1 WHST.6-8.9 6.SP.B.5 7.RP.A.2
	Evolution: 14	Analyzing and Interpreting Data Engaging in Argument from Evidence	MS-ESS3.C MS.LS4.A MS.LS4.B MS.LS4.D	Cause and Effect Connections to the Nature of Science Patterns	RST.6-8.7 WHST.6-8.9
SC.7.14. History of Earth					
SC.7.14.6. Gather, analyze, and communicate evidence to explain Earth's history.					
SC.7.14.6.A. **Construct an explanation** based on evidence for how geoscience processes have changed Earth's surface at <u>varying time and spatial scales.</u>	*Geological Processes:* 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13*	Analyze and Interpret Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from	MS-ESS1.C MS-ESS2.A MS-ESS2.B MS-ESS2.C MS-ESS3.A MS-ESS3.B	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Energy and Matter Patterns Scale, Proportion, and	RST.6-8.1 RST.6-8.2 RST.6-8.3 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.1 6.RP.A.1 6. NS.C.5 7. RP.A.2 MP.4

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking		Quantity Stability and Change Structure and Function Systems and System Models	
	Land, Water, and Human Interactions: 3, 4, 6, 7, 8, 10, 11, 12, 13, 14*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ETS1.A MS-ETS1.B MS-ESS2.A MS-ESS2.C MS-ESS3.C MS-LS2.A MS-LS2.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Energy and Matter Patterns Scale, Proportion, and Quantity Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5 MP.2 MP.4

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.7.14.6.B. **Analyze and interpret data** on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions. Paleomagnetic anomalies in oceanic and continental crust are not assessed.	*Geological Processes:* 10, 11, 12, 13, 14*	Analyze and Interpret Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Planning and Carrying Out Investigations Obtaining, Evaluating, and Communicating Information	MS-ESS1.C MS-ESS2.A MS-ESS2.B MS-ESS3.B	Cause and Effect Connections to the Nature of Science Patterns Scale, Proportion, and Quantity Stability and Change System and System Models	RST.6-8.2 WHST.6-8.1 WHST.6-8.2 SL.8.1 6.RP.A.1 7.RP.A.2 MP.2
SC.7.14.6.C. **Analyze and interpret data** on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	*Geological Processes:* 1, 3, 4, 6, 7, 8, 11, 18*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from	MS-ESS1.C MS-ESS2.A MS-ESS2.C MS-ESS3.B	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Patterns Scale, Proportion, and Quantity	RST.6-8.1 RST.6-8.2 RST.6-8.3 RST.6-8.4 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.1 6.NS.C.5 MP.2 MP.4

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Evidence Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking		Stability and Change Structure and Function Systems and System Models	

EIGHTH GRADE

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
SC.8.1. Forces and Interactions					
SC.8.1.1. Gather, analyze, and communicate evidence of forces and interactions.					
SC.8.1.1.A. Apply Newton's Third Law to **design a solution** to a problem involving the motion of two colliding objects. Assessment is limited to vertical or horizontal interactions in one dimension.	*Force and Motion:* 1, 10, 11, 12*	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models Obtaining, Evaluating, and Communicating Information	MS-ETS1.A MS-PS2.A MS.PS3.A MS-PS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.7 MP.2
SC.8.1.1.B. **Develop a model** to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	*Biomedical Engineering:* 2, 4, 5, 8, 9*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-LS1.A	Connections to Engineering, Technology, and Applications of Science Structure and Function	SL.8.4 6.RP.A.1 6.RP.A.3 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Using Mathematics and Computational Thinking			
	Chemical Reactions: 8, 9, 10, 11	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions	MS-PS1.B MS-PS3.A MS-ETS1.B MS-ETS1.C	Energy and Matter	RST.6-8.3
	Weather and Climate: 12*	Developing and Using Models Engaging in Argument from Evidence Planning and Conducting Investigations	MS-ETS1.B MS-ESS1.C MS-ESS2.C	Connections to Engineering, Technology and Applications of Science Structure and Function	RST.6-8.3 SL.8.1 SL.8.4
	Fields and Interactions: 1, 2, 3, 6, 11, 13*	Asking Questions and Defining Problems Analyzing and Interpreting Data Connections to Nature of Science: Scientific Knowledge Is Based on Empirical Evidence Constructing Explanations and	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS2.B MS-PS3.A MS-PS3.B MS-PS3.C	Cause and Effect Connections to Nature of Science: Influence of Science, Engineering, and Technology on Society and the Natural World Scale, Proportion, and Quantity	RST.6-8.1 RST.6-8.7 SL8.5 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Designing Solutions Developing and Using Models Engaging in Argument from Evidence		Systems and System Models	
SC.8.1.1.C. **Plan an investigation** to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. Assessment is limited to forces and changes in motion in one-dimension in an inertial reference frame and to change in one variable at a time; does not include use of trigonometry.	*Force and Motion:* 1, 6, 7, 8, 9, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-ETS1.A MS-PS2.A MS.PS3.A MS-PS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Scale, Proportional, and Quantity Stability and Change	RST.6-8.1 RST.6-8.2 RST.6-8.3 RST.6-8.7 6.RP.AP.2 6. SP.B.5 7. EE.B.4 7.RP.A.2 MP.2
SC.8.1.1.D. **Ask questions** about data to determine the factors that affect the strength of electrical and magnetic forces. Assessment about questions that require quantitative answers is limited	*Fields and Interactions:* 7, 8, 9, 12, 13*, 14	Asking Questions and Defining Problems Developing and Using Models Engaging in Argument from Evidence	MS-PS2.B MS-ETS1.B	Cause and Effect Patterns Systems and System Models	RST.6-8.1 RST.6-8.3 WHST.6-8.7 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
to proportional reasoning and algebraic thinking.		Connections to the Nature of Science Planning and Carrying Out Investigations			
SC.8.1.1.E. **Construct and present arguments** using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. Assessment does not include Newton's Law of Gravitation or Kepler's Laws.	*Fields and Interactions:* 3, 4, 7*	Analyzing and Interpreting Data Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence	MS-PS2.B MS-PS3.A MS-PS3.C MS-ETS1.A MS-ETS1.B	Connections to Nature of Science Patterns Systems and System Models	RST.6.8.1 WHST.6-8.1 SL.8.5 6.EE.C.9 MP.2
SC.8.1.1.F. **Conduct an investigation** and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. Assessment is limited to electric and magnetic fields, and limited to qualitative evidence for the existence of fields.	*Fields and Interactions:* 5, 7, 9, 10, 12*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence	MS-PS2.B MS-PS3.A MS-PS3.C MS-ETS1.B	Cause and Effect Patterns Systems and System Models	RST.6-8.3 WHST.6-8.1 WHST.6-8.7 MP.2

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Planning and Carrying Out Investigations			
SC.8.2. Waves and Electromagnetic Radiation					
SC.8.2.2. Gather, analyze, and communicate evidence of waves and electromagnetic radiation.					
SC.8.2.2.A. **Use mathematical representations** to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. Assessment does not include electromagnetic waves and is limited to standard repeating waves.	*Waves:* 1, 2, 3, 7*	Analyzing and Interpreting Data Developing and Using Models Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	MS-PS4.A	Connections to Engineering, Technology, and Applications of Science Patterns Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.9 6.RP.A.1 7.RP.A.2 MP.2 MP.4
SC.8.2.2.B. **Develop and use a model** to describe that waves are reflected, absorbed, or transmitted through various materials. Assessment is limited to qualitative applications pertaining to light and mechanical waves	*Waves:* 3, 4, 8, 9, 10, 11, 12, 13*	Analyzing and Interpreting Data Connections to the Nature of Science Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-PS4.A MS-PS4.B	Connections to Engineering, Technology, and Applications of Science Patterns Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.9 MP.2
SC.8.2.2.C. **Integrate qualitative scientific and**	*Waves:* 5, 6	Asking Questions and Defining Problems	MS-PS4.C MS-ETS1.A	Connections to Engineering, Technology, and Applications	RST.6-8.1 RST.6-8.3

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. Assessment does not include binary counting. Assessment does not include the specific mechanism of any given device.		Connections to Engineering, Technology, and Applications of Science Structure and Function Developing and Using Models Obtaining, Evaluating, and Communicating Information	MS-ETS1.B MS-ETS1.C	of Science Structure and Function	RST.6-8.9 WHST.6-8.9
SC.8.4 Energy					
SC.8.4.3. Gather, analyze, and communicate evidence of energy.					
SC.8.4.3.A. **Construct and interpret graphical displays of data** to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	*Force and Motion: 1, 2, 3, 4, 5**	Analyzing and Interpreting Data Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-ETS1.A MS-PS2.A MS.PS3.A MS-PS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Energy and Matter Patterns Scale, Proportion, and Quantity	RST.6-8.7 WHST.6-8.2 6.SP.B.5 7.RP.A.2
SC.8.4.3.B. **Develop a model** to describe that when the arrangement of objects interacting at a distance changes, then different amounts of potential energy	*Fields and Interactions:* 3, 4, 6, 7, 10, 11*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to Nature of	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS2.B MS.PS3.A MS.PS3.C	Cause and Effect Connections to Nature of Science Scale, Proportion, and	RST.6-8.1 RST.6-8.3 RST.6-8.7 SL.8.5 WHST.6-8.1 WHST.6-8.7

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
are stored in the system. Assessment is limited to two objects and electric, magnetic, and gravitational interactions.		Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence		Quantity Systems and System Models	6.EE.C.9 MP2
	Force and Motion: 1, 3, 4, 5, 10, 14	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	MS-ETS1.A MS-PS2.A MS-PS3.A MS-PS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science	RST.6-8.7
SC.8.9. Heredity: Inheritance and Variation of Traits					
SC.8.9.4. Gather, analyze, and communicate evidence of the inheritance and variation of traits.					
SC.8.9.4.A. **Develop and use a model** to describe why structural changes to genes (mutations) may result in harmful, beneficial, or neutral effects to structure and function of organisms. Assessment does not include specific changes at the molecular level, mechanisms for protein synthesis, or specific types of mutations.	*Reproduction:* 1, 3, 8, 12, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Obtaining, Evaluating, and Communicating Information	MS-LS1.B MS-LS3.A MS-LS3.B	Cause and Effect Connections to the Nature of Science Patterns Scale, Proportion, and Quantity Structure and Function	RST.6-8.1 RST.6-8.2 RST.6-8.4 RST.6-8.7 SL.8.1 WHST.6-8.2 WHST.6-8.9 6.SP.B.5 6.RP.A.1

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Planning and Carrying Out Investigations			
	Evolution: 3, 4, 5*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Using Mathematics and Computational Thinking	MS-LS2.A MS-LS3.A MS-LS3.B MS-LS4.B MS-LS4.C	Cause and Effect Patterns Structure and Function	RST.6-8.2 RST.6-8.3 SL.8.1 SL.8.4 WHST.6-8.2 WHST.6-8.9 6.SP.B.5 6.RP.A.1
SC.8.9.4.B. **Gather and synthesize information** about technologies that have changed the way humans influence inheritance of desired traits in organisms.	*Evolution:* 14, 15, 16*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-ESS3.C MS-LS4.A MS-LS4.B MS-LS4.C MS-LS4.D	Cause and Effect Connections to the Nature of Science: Science Addresses Questions About the Natural and Material World Connections to the Nature of Science: Scientific Knowledge Assumes an Order and Consistency in Natural Systems Patterns	RST.6-8.1 RST.6-8.7 WHST.6-8.2 WHST.6-8.8 WHST.6-8.9
SC.8.10 Natural Selection and Adaptations					
SC.8.10.5 Gather, analyze, and communicate evidence of natural selection and adaptations.					
SC.8.10.5.A. **Analyze and interpret data** for patterns in the fossil record that	*Evolution: 7, 8, 9, 10, 11**	Analyzing and Interpreting Data Connections to the Nature of	MS-ESS1.C MS-LS3.B MS-LS4.A	Cause and Effect Connections to Engineering,	RST.6-8.3 RST.6-8.7 RST.6-8.9

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. Assessment does not include the names of individual species or geological eras in the fossil record.		Science Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-LS4.B MS-LS4.C	Technology, and Applications of Science Connections to the Nature of Science Patterns	WHST.6-8.2 6.SP.B.5
SC.8.10.5.B. **Apply scientific ideas to construct an explanation** for the anatomical similarities and differences among and between modern and fossil organisms to infer evolutionary relationships.	*Evolution:* 7, 8, 9, 10 11, 12*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-ESS1.C MS-LS3.B MS-LS4.A MS-LS4.B MS-LS4.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Patterns	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2 6.SP.B.5
SC.8.10.5.C. **Construct an explanation** based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	*Evolution:* 1, 2, 3, 4*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from	MS-LS2.A MS-LS3.B MS-LS4.B MS-LS4.C	Cause and Effect Patterns	RST.6-8.2 RST.6-8.3 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Evidence Using Mathematics and Computational Thinking			
SC.8.10.5.D. **Use mathematical representations** to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. Assessment does not include Hardy Weinberg calculations.	*Evolution:* 1, 2, 3, 4, 5, 6*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Using Mathematics and Computational Thinking	MS-LS2.A MS-LS3.A MS-LS3.B MS-LS4.B MS-LS4.C	Cause and Effect Patterns Structure and Function	RST.6-8.2 RST.6-8.3 SL.8.1 SL.8.4 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5
SC.8.11 Space Systems					
SC.8.11.6. Gather, analyze, and communicate evidence of the interactions among bodies in space.					
SC.8.11.6.A. **Develop and use a model** of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	*Solar System and Beyond:* 2, 3, 4, 5*, 6, 7, 8, 9*	Analyze and Interpret Data Constructing Explanations and Designing Solutions Developing and Using Models	MS-ESS1.A MS-ESS1.B	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to Nature of Science Patterns Scale, Proportion, and Quantity	RST.6-8.2 WHST.6-8.2 SL.8.5 6.RP.A.1

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
				Systems and System Models	
SC.8.11.6.B. **Develop and use a model** to describe the role of gravity in the motions within the galaxy and the solar system. Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of planets as viewed from Earth.	*Solar System and Beyond:* 10, 11, 12, 14, 15, 16*	Analyze and Interpret Data Connections to the Nature of Science Developing and Using Models Using Mathematics and Computational Thinking	MS-ESS1.A MS-ESS1.B	Connections to Engineering, Technology, and Applications of Science Connections to Nature of Science Patterns Scale, Proportion, and Quantity Systems and System Models	RST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.4 6.RP.A.1 6.RP.A.3 MP.2 MP.4
SC.8.11.6.C. **Analyze and interpret data** to determine scale properties of objects in the solar system. Assessment does not include recalling facts about properties of the planets and other solar system bodies	*Solar System and Beyond:* 1, 10, 11, 12, 13*	Analyze and Interpret Data Developing and Using Models Using Mathematics and Computational Thinking	MS-ESS1.A MS-ESS1.B	Connections to Engineering, Technology, and Applications of Science Scale, Proportion, and Quantity	WHST.6-8.2 SL.8.4 6.RP.A.1 6.RP.A.3 MP.2 MP.4
SC.8.14. History of Earth					
SC.8.14.7. Gather, analyze, and communicate evidence to explain Earth's history.					
SC.8.14.7.A. **Construct a scientific explanation** based on evidence from rock strata for how the geologic time scale is used to organize	*Earth's Resources:* 9, 10, 11, 12*	Constructing Explanations and Designing Solutions Developing and Using Models	MS-ESS1.C	Patterns Scale, Proportion, and Quantity	RST.6-8.3 WHST.6-8.1 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
Earth's 4.6-billion-year-old history. Assessment does not include recalling the names of specific periods or epochs and events within them.		Planning and Carrying Out Investigations Connections to the Nature of Science		Stability and Change	